

A Taxonomic Review of the Genus *Colpotrochia* Holmgren (Hymenoptera, Ichneumonidae, Metopiinae) in Korea

Jin-Yeoul CHA and Jong-Wook LEE

Department of Biology, Yeungnam University, Gyungsan, 712-749 Korea
E-mail: trycha77@chollian.net

Abstract Korean species of the genus *Colpotrochia* Holmgren are reviewed. Among them five species, *C. (C.) pilosa* Cameron, *C. (C.) nipponensis* Uchida, *C. (C.) jozankeana* Uchida, *C. (S.) osuzensis* Kusigemati and *C. (S.) nigra* Kusigemati are newly recorded for the first time in Korea. Head and abdomen of species are photographed. A key to the Korean species of the genus, based on the external characters are provided.

Key words Hymenoptera, Ichneumonidae, Metopiinae, *Colpotrochia*, Korea

INTRODUCTION

The subfamily Metopiinae is widely distributed throughout the world, from the arctic to the tropic regions, and in dry or wet climates. The Metopiinae are parasitic mostly on Lepidoptera, But there are a few records of other hosts. Oviposition is placed in the host larva, apparently a considerable time prior to pupation, but emergence is always from pupa.

The genus *Colpotrochia* was redefined by Townes and Townes (1959). Typical species of *Colpotrochia* are easy to distinguish from its allies with a temple very narrow and sloping, the propodeum almost smooth and weakly convex, the first tergite long and slender, and the abdomen banded with yellow.

The first report of *Colpotrochia* in Korea was *C. orientalis* Uchida and *C. kurisuei* Uchida (Uchida, 1930; 1955). Kim (1970) reported *C. orientalis* Uchida, *C. kurisuei* Uchida and *C. fusca* Matsumura. As a result of the present study, the Korean *Colpotrochia* is enumerated with eight species including five newly known species, *C. (C.) pilosa* Cameron, *C. (C.) nipponensis* Uchida, *C. (C.) jozankeana* Uchida, *C. (S.) osuzensis* Kusigemati and *C. (S.) nigra* Kusigemati. The terminology and abbreviation used are as followings: GW- Gangweon; GG- Gyeonggi; CB- Chungbuk; CN- Chungnam; GB- Gyungbuk; GN- Gyeongnam; JB- Jeonbuk; JN- Jeonnam; JJ- Jeju; BI (Brachial index of fore wing)- Shortest distance Cu1 and 1A (Distal end)/Shortest distance Cu1 and 1A (Proximal end); CI (Cubital index of fore wing)- Length of Cu1 between 1 mCu and Cua/Length of Cu1b; DBI (Disco-brachial index of fore wing)- Length of Cu1 between Cua and 1 mCu/Length of 1 mCu between 2 rm, 3 rm and Cu1; MI (Marginal index of fore wing)- Length of Rs/Length of Rs-2 rm; NI (Radial index of hind wing)- Length of Cu1

between M and irm2/Length of irm2 between Cu1 and 1A; RI (Radial index of hind wing)– Length of Rs between R1 and irm1/Length of irm1 between Rs and M; IOD– Distance between lateral ocellus and median ocellus; OOD–Distance between lateral ocellus and eye; POD– Distance between lateral ocellus and occipital carina; MOD–Maximum diameter of lateral ocellus. All examined specimens are deposited in the collection of the Animal Taxonomy Laboratory, College of Science, Yeungnam University, Korea.

TAXONOMIC ACCOUNT

Genus *Colpotrochia* Holmgren 화장뚱툽맵시벌속

Colpotrochia Holmgren, 1855: 80. Type species: *Ichneumon elegantulus* Schrank.

Alcocerus Foerster, 1868: 161. Type species: *Tryphon trifasciatus* Cresson.

Exochoides Cresson, 1868: 37. Type species: *Exochoides mexicana* Cresson.

Aithris Cameron, 1900: 106. Type species: *Aithris coenutus* Cameron.

Inoresa Cameron, 1909: 724. Type species: *Inoresa pilosa* Cameron.

Diagnosis. Areolet present or absent; nervellus vertical or postfurcal; temple very narrow and sloping; propodeum almost smooth and weakly convex; lateral carina of propodeum present or absent; the third lateral area of propodeum inconspicuously defined; propodeal spiracle long, oval; the first tergite long and slender, and other tergites banded with yellow.

Key to the subgenera and species of the genus *Colpotrochia* Holmgren

1. Nervellus strongly vertical or reclivous (with its front end farther the wing base than its hind end).
 Arolet present or absent (Subgenus *Colpotrochia* Holmgren) 2
- Nervellus strongly inclivous (with its front end nearer the wing base than its hind end). Arolet present
 (Subgenus *Scallama* Cameron) 5
2. Scutellum almost yellow 3
- Scutellum black with apical margin with yellow mark 4
3. Mesonotum and face completely black (fig. 1). Pronotum without yellow marking along upper margin
 *C. (C.) pilosa* Cameron
- Mesonotum with four longitudinal yellow stripes. Face completely black (fig 3). Pronotum yellow along
 the upper margin *C. (C.) nipponensis* Uchida
4. Frontal process thickening towards the top in dorsal view of head, its horizontal rim thick
 *C. (C.) jozankeana* Uchida
- Frontal process strongly narrowing towards the top in dorsal view of head, its horizontal rim thin
 *C. (C.) fusca* Matsumura
5. Propodeum without lateral longitudinal carinae *C. (S.) kurisuei* Uchida
- Propodeum with lateral longitudinal carinae 6
6. Propodeum without median longitudinal carinae (fig. 6). First to fourth abdominal tergites black with

- yellow bands (fig. 6) *C. (S.) osuzensis* Kusigemati
- Propodeum with moderate median longitudinal carinae. 7
7. Mandibular teeth approximately equal in length. Propodeum with apical transverse carina incomplete.
Second and third abdominal tergites yellow (fig. 8) *C. (S.) orientalis* Uchida
- Mandibular teeth with upper tooth larger and longer than the lower tooth. Propodeum with apical
transverse carina complete and strong. Abdominal tergites entirely black *C. (S.) nigra* Kusigemati

Subgenus *Colpotrochia* Holmgren 화장몽톡맵시벌 아속 (신칭)

Diagnosis. Areolet present or absent; nervellus vertical or postfurcal, broken near the middle; the first tergite long and slender, with yellow band on abdomen, 1.5 to 3.5 as long as wide; epipleurum of second tergite about 1.3 to 7 times as long as width.

***Colpotrochia (Colpotrochia) fusca* Matsumura** 화장몽톡맵시벌

Colpotrochia elegantula f. *fusca* Matsumura, 1931: 40.

Colpotrochia elegantula Yasumatsu, 1934: 67.

Colpotrochia (Colpotrochia) fusca Kusigemati, 1971: 242.

Diagnosis. Clypeus and face black; Scutellum black, apical margin narrowly yellow; first tergite with median longitudinal carinae as long as 0.5; hind tarsal claws simple.

Measurements. CI:0.85, BI:1.6, DBI:0.57, MI:2.08, NI:2.0, RI:6.0, IOD/OOD:2.5, IOD/POD:1.25, IOD/MOD: 5.0, POD/MOD:4.

Distribution. Korea, Russia (Kuriles), and Japan.

Materials examined. GG- 1 ♀, Mt. Surak, 29 V 1986.

Remarks. This species easily distinguished from *jozankeana* Uchida by scutellum and mesonotum black, hind femur yellow, third abdominal tergite black with yellow band.

***Colpotrochia (Colpotrochia) jozankeana* Uchida** 남방화장몽톡맵시벌 (신칭)

Colpotrochia elegantula var. *jozankeanus* Uchida, 1930: 261.

Colpotrochia elegantula f. *jozankeanus* Matsumura, 1931: 40.

Colpotrochia (Colpotrochia) jozankeana: Kusigemati, 1971: 242.

Diagnosis. Clypeus black; scutellum black, apical margin narrowly yellow; first tergite with median longitudinal carinae as long as 0.5; third abdominal tergites yellow; hind tarsal claws simple.

Measurements. CI: 0.78-0.88, BI: 1.25-1.45, DBI: 0.6-0.71, MI: 1.6-1.8, NI: 1.3-1.75, RI: 3.57-4.64, IOD/OOD: 1.0-1.5, IOD/POD: 0.45-1.33, IOD/MOD: 1.1-2.0, POD/MOD: 1.4-2.2.

Distribution. Korea and Japan.

Materials examined. GG- 1 ♂, Gwangeung, 1 X 1984; 1 ♀, Mt. Dobong, 22 IX 1984; 1 ♀, Bokwangsa Temple, 2 X 1982, GN- 1 ♂, Geoje, 23 IX 1983, GB- 1 ♂, Bonghwa, 25 VII 1986, JN- 1 ♂, Gwangju, 15 IX 1984.

Remarks. This species easily distinguished from *fusca* Matsumura by scutellum yellow with black mark, mesonotum and hind femur black, third abdominal tergite yellow. This species is recorded for the first time in Korea.

***Colpotrochia (Colpotrochia) pilosa* Cameron** 붉은화장몽톡맵시벌 (신칭)

(Figs 1, 2)

Inoresa pilosa Cameron, 1909: 724; Morley, 1913: 307; Townes & Townes, 1959: 132.

Diagnosis. Clypeus black; scutellum yellow, apical margin narrowly black; first tergite with median longitudinal carinae as long as 0.5; third abdominal tergite with yellow; hind tarsal claws simple.

Measurements. CI: 0.9, BI: 1.33, DBI: 0.78, MI: 1.6, NI: 1.5, RI: 4.19, IOD/OOD: 1.5, IOD/POD: 0.38, IOD/MOD: 1.0, POD/MOD: 2.67.

Distribution. Korea, Japan, and India.

Materials examined. GB- 1♀, Unmunsa Temple, 17 VII 1989. GG- 1♂, Mt. Chonma, 12 VII 1983.

Remarks. This species easily distinguished from *nipponensis* Uchida by scutellum yellow with black mark, mesonotum and hind femur completely black, pronotum without yellow marking along upper margin. This species is recorded for the first time in Korea.

***Colpotrochia (Colpotrochia) nipponensis* Uchida** 네줄화장몽톡맵시벌 (신칭)

(Figs 3, 4)

Colpotrochia nipponensis Uchida, 1930: 262.; Townes & Townes, 1959: 132; Kusigemati, 1971: 243.

Diagnosis. Clypeus and scutellum yellow; first tergite with yellow band and median longitudinal carinae as long as 0.5; third abdominal tergite black with yellow band; hind tarsal claws simple.

Measurements. CI: 0.86-0.93, BI: 1.33-1.9 DBI: 0.68-0.73, MI: 1.6-1.94, NI: 0.86-1.16, RI: 4.07-6.7, IOD/OOD: 1.0-1.67, IOD/POD: 0.67-0.83, IOD/MOD: 0.66-1.43, POD/MOD: 0.66-1.71.

Distribution. Korea and Japan.

Materials examined. GG- 1♀, Mt. Chonma, 12 VII 1983; 1♀, Mt. Dobong 11 VI 1983; 2♀, Gwangleung, 20 VIII 1956; 1♀, Namhansanseong, 29 V 1982. JN- 1♀, Gwangju, 22 VII 1985.

Remarks. This species easily distinguished from *pilosa* Cameron by scutellum yellow, mesonotum with four longitudinal yellow stripes, pronotum yellow along the upper margin, basally region of hind femur yellow. This species is recorded for the first time in Korea.

Subgenus *Scallama* Cameron 동양화장몽톡맵시벌 아속 (신칭)

Scallama Cameron, 1899: 216. Type species: *Scallama trilineata* Cameron.

Colpotrochioidea Uchida, 1930: 263. Type species: *Colpotrochioidea orientalis* Uchida.

Diagnosis. Areolet present; nervellus strongly antefurcal, broken far below the middle; lateral carina of propodeum present; propodeal spiracle subcircular to long oval; first tergite 1.25 to 1.8 as long as wide; epipleura of second tergite about 4 to 7 times as long as wide.

***Colpotrochia (Scallama) kurisuei* Uchida** 어리화장풍툽맵시벌

Colpotrochioides kurisuei Uchida, 1930: 264; Kim, 1955: 489; Townes & Townes, 1959: 128; Kusigemati, 1971: 246.

Diagnosis. Clypeus and scutellum black; abdominal tergites entirely black; first tergite with median longitudinal carinae as long as 0.5; hind tarsal claws simple.

Measurements. CI: 0.89, BI: 1.42, DBI: 0.64, MI: 2.03, NI: 2.0, RI: 5.0, IOD/OOD: 2.0, IOD/POD: 0.2, IOD/MOD: 0.5, POD/MOD: 2.5.

Distribution. Korea and Japan.

Materials examined. GG- 1 ♀, Yupyong, 10 VII 1978; 1 ♀, Paengnyongdo, 26 VII 1987.

Remarks. This species easily distinguished from *osuzensis* Kusigemati by scutellum, mesonotum and hind femur black, first to third abdominal tergite black.

***Colpotrochia (Scallama) osuzensis* Kusigemati** 점박이화장풍툽맵시벌 (신칭)

(Figs 5, 6)

Colpotrochia (Scallama) osuzensis Kusigemati, 1971: 246.

Diagnosis. Clypeus and scutellum black; first to fourth abdominal tergites black with yellow bands; propodeum with median longitudinal carinae entirely absent; hind tarsal claws simple.

Measurements. CI: 0.89–0.9, BI: 1.15–1.29, DBI: 0.56–0.64, MI: 1.57–1.67, NI: 2.0–4.0, RI: 3.73–6.1, IOD/OOD: 1.0, IOD/POD: 0.33, IOD/MOD: 1.0, POD/MOD: 3.

Distribution. Korea and Japan.

Materials examined. JN- 1 ♀, Mujukuchondong, 11 VI 1972. GG- 1 ♀, Mt. Youngmun, 27 V 1982. GB- 1 ♀, Chongnug, 6 VI 1986; 1 ♂, Mt. Juwang, 14 V 1987. JN- 1 ♂, Mt. Jiri, 20 IX 1989.

Remarks. This species easily distinguished from *kurisuei* Uchida by scutellum and mesonotum, hind femur blackish-brown, first to third abdominal tergites black with yellow bands. This species is recorded for the first time in Korea.

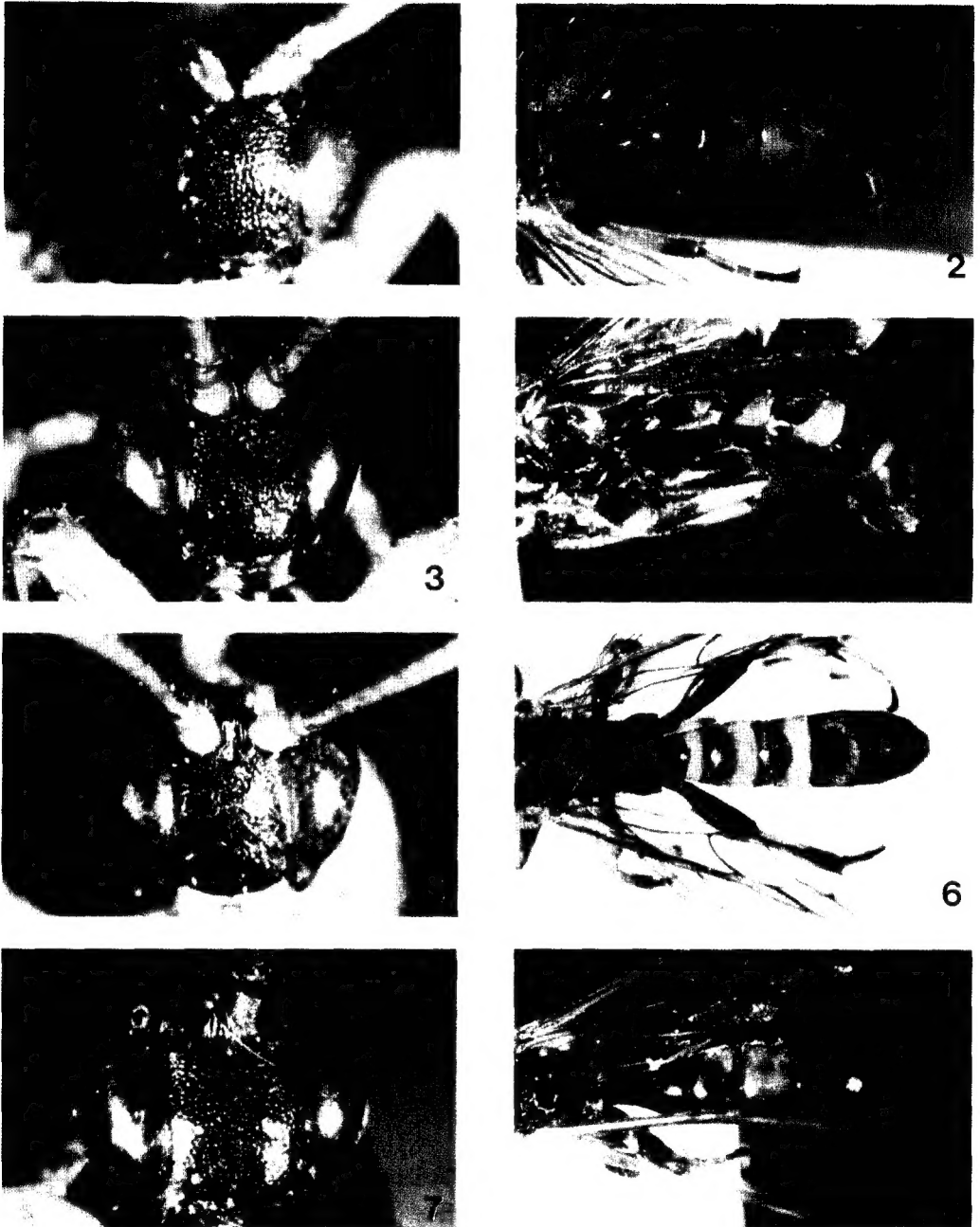
***Colpotrochia (Scallama) orientalis* Uchida** 동양화장풍툽맵시벌

(Figs 7, 8)

Colpotrochioides orientalis Uchida, 1930: 264; Townes & Townes, 1951: 355; Kim, 1955: 489; Kusigemati, 1971: 246.

Diagnosis. Clypeus and scutellum black; second and third abdominal tergites yellow; first tergite with median longitudinal carinae as long as 0.5; hind tarsal claws simple.

Measurements. CI: 0.92–0.95, BI: 1.5–1.64, DBI: 0.65–0.7, MI: 1.63–1.67, NI: 1.6–1.75, RI:



Figs 1-8. *Colpotrochia* spp., frontal view of head: 1. *C. (C.) pilosa* Cameron, 3. *C. (C.) nipponensis* Uchida, 5. *C. (S.) osuzensis* Kusigemati, 7. *C. (S.) orientalis* Uchida, lateral view of abdominal tergites: 2. *C. (C.) pilosa* Cameron, 4. *C. (C.) nipponensis* Uchida, 6. *C. (S.) osuzensis* Kusigemati, 8. *C. (S.) orientalis* Uchida.

3.44-4.38, IOD/OOD: 1.0, IOD/POD: 0.2, IOD/MOD: 0.67, POD/MOD: 3.33.

Distribution. Korea and Japan.

Materials examined. JN- 1 ♀, Mt. Daedun, 15 VIII 1972; 1 ♀, Mt. Jiri, 31 VII 1981. GN- 1 ♀, Changwon, 27 VII 1989.

Remarks. This species easily distinguished from *nigra* Kusigemati by scutellum, mesonotum and hind femur black, Second and third abdominal tergites yellow.

***Colpotrochia (Scallama) nigra Kusigemati* 검은화장뿔목매시벌 (신칭)**

Colpotrochia (Scallama) nigra Kusigemati, 1971: 247-248.

Diagnosis. Clypeus and scutellum black, abdominal tergites entirely black, first tergite with median longitudinal carinae weak and very short, hind tarsal claws simple.

Measurements. IOD/OOD: 0.67, IOD/POD: 0.29, IOD/MOD: 1, POD/MOD: 3.5.

Distribution. Korea and Japan.

Materials examined. GN- 1 ♀, Changweon, 27 VII 1989.

Remarks. This species easily distinguished from *orientalis* Uchida by scutellum, mesonotum and hind femur black, Abdominal tergites entirely black. This species is recorded for the first time in Korea.

ACKNOWLEDGMENTS

This work was supported by the postdoctoral fellowships program for the first author from Korea Science & Engineering Foundation (KOSEF).

REFERENCES

- Cameron, P. 1899. Hymenoptera orientalia, or contributions to a of the Hymenoptera of the Oriental zoological region. part VIII. The Hymenoptera of the Khasia Hills. First paper. *Mem. & Proc. Manchester Lit. Phil. Soc.* 43: 1-220.
- Cameron, P. 1900. Hymenoptera orientalia, or contributions to the knowledge of the hymenoptera of the oriental zoological region. part IX. The hymenoptera of the Khasia Hills. *Mem. & Proc. Manchester Lit. Phil. Soc.* 44(15): 1-144.
- Cresson, 1868. Catalogue of a collection of Hymenoptera made by Prof. F. Sumichrast near, Cordova, Mexico. *Trans. Amer. Ent. Soc.* 2: 1-38.
- Foerster, P.D. 1868. Synopsis der Familien und Gattungen der Ichneumoniden. *Verh. Naturh. Ver. Rheinlande.* 25: 160-165, 200-220.
- Holmgren, A.E. 1855. Entomologiska anteckningar under en resa i södra Sverige ar 1854. *K. Svensk. Vetensk. Akad. Handl.* 75(1854): 1-104.
- Kim, C.W. 1955. Das Studium über die Schupferespen (Ichneumonidae: Hym.) aus Korea. *Commemoration These, Fiftieth Anniversary, Korea Univ.* 64-67. (in Korean)
- Kim, C.W. 1970. Illustrated Encyclopedia of Fauna and Flora of Korea. 11: 271-421. (in Korean)
- Matsumura, S. 1931. *6000 illustrated insects of Japan Empire.* 34-71. Tokyo.
- Townes, H. and M. Townes. 1951. Hymenoptera of America North of Mexico. Synoptic catalogue. U. S.

- Dept. Agr. Monog. 2: 354-360.
- Townes, H. and M. Townes. 1959. Ichneumon-Flies of America Mexico: 1. Subfamily Metopiinae. *U. S. Nat. Mus. Bul.* 216(1): 1-318.
- Uchida, T. 1930. Vierter Beitrag zur Ichneumoniden-Fauna Japans (Tryphoninae) *J. Faculty Agr. Hokkaido Imp. Univ.* 25: 243-298.
- Uchida, T. 1955. Die von Dr. K. Tsuneki in Korea gesammelten Ichneumoniden. *J. Faculty Agr. Hokkaido Imp. Univ.* 50: 95-133.
- Yasumatsu, K. 1934. Les Hymenopteres De Lile Yakuchlma. *Mushi.* 7(2): 65-70.

한국산 화장몽톡맵시벌속 (벌목, 맵시벌과, 줄몽톡맵시벌아과)의 분류학적 재검토

차 진 열 · 이 종 욱

영남대학교 생물학과

한국산 화장몽톡맵시벌속의 분류학적 검토 결과 *C. (C.) pilosa* Cameron, *C. (C.) nipponensis* Uchida, *C. (C.) jozankeana* Uchida, *C. (S.) osuzensis* Kusigemati 및 *C. (S.) nigra* Kusigemati의 5 미기록종을 새로이 밝혀냄으로써 한국산은 총 8종으로 정리되었다. 종들의 분류동정을 위한 검색표와 사진을 제시하였다.

검색어: 벌목, 맵시벌과, 줄몽톡맵시벌아과, 화장몽톡맵시벌속, 한국

(Received : July 15, 2000)

(Accepted : August 20, 2000)